CAFO WPDES Compliance Report (6-12-14)

Inspection date: April 24, 2014

Inspection type: Compliance

Operation Name: Thompson's Gold Dust Dairy

WPDES Permit No. WI-0058386-04-0

Operation Address: 3793 State Hwy 57, Depere, WI 54115

On-Site Representatives: Jim and James Thompson

Report Writer: Casey Jones, DNR Agricultural Runoff Management Specialist

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On April 24, 2014 at 1:00 PM Jones conducted a full compliance inspection at Thompson's Gold Dust Dairy. Also present at the inspection were: Jim and James Thompson (owner/manager); Brad Holtz and Ryan Yelle (DNR Agricultural Specialists); Joan Rodgers and Ben Adtkinson (US EPA); and Todd Schaumberg (Polenske Crop Consulting). Purpose of EPA staff presence was to review DNR inspection procedures. Weather on the day of inspection was rainy.

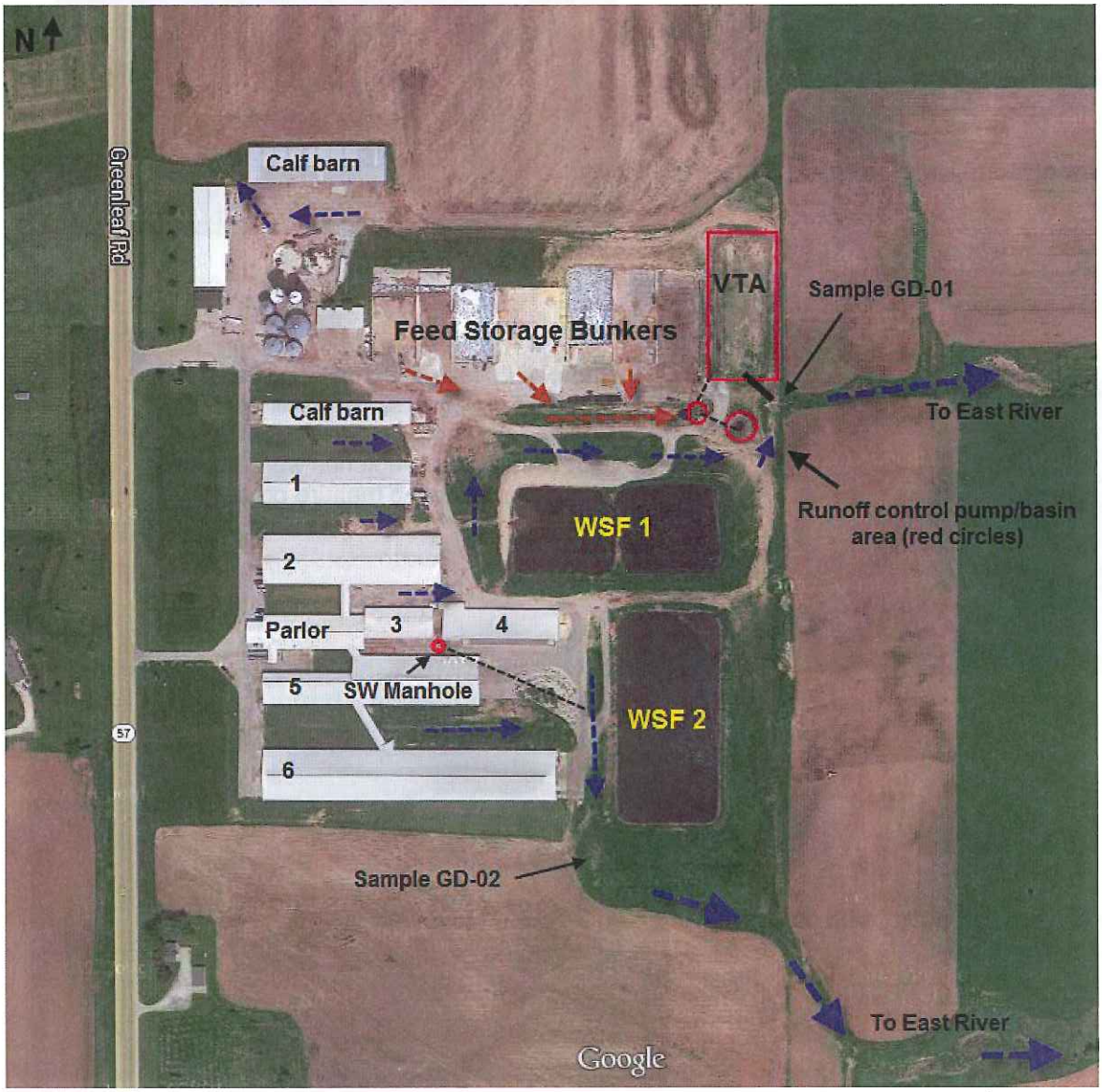


Photo 1: Air photo (google maps) with facility features labeled.

Feedlot Runoff

Most animals at Gold Dust Dairy are all confined under roof in buildings. The calf hutch area between buildings labeled 2 and 3; the hutches on east end of southern calf barn; and the storm water manhole drain shown on overview map (photo 1) may be contributing to the bacteria detected in water samples.

Photo 2 (above): View of area between buildings 3 & 4. Jim stated that no manure is stored in this location. Some faintly brown discolored rain water was present in this location.

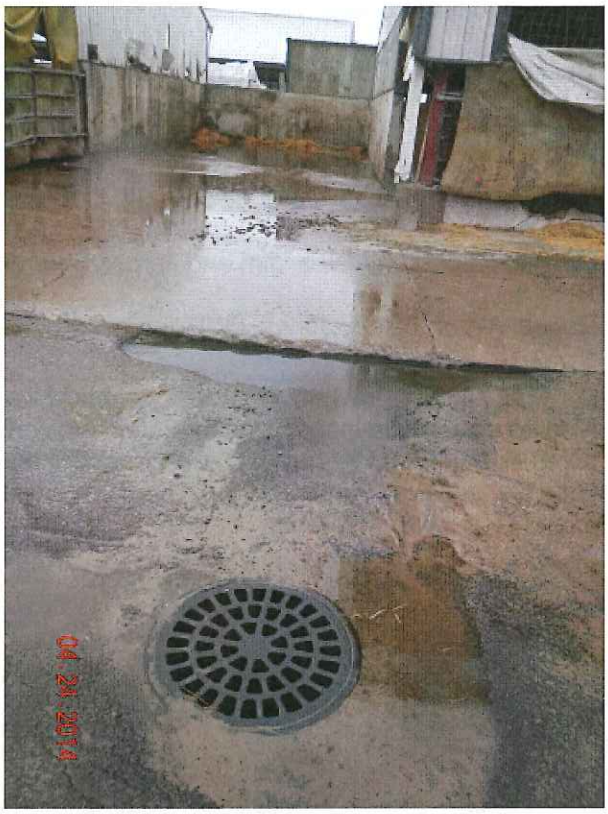


Photo 3 (right): View of storm water manhole that accepts rain water.

Photo 4: Looking west at small calf hutch area that drains to storm water ditch. Hutches did not have calves in them at time of inspection; hutches were bedded with clean straw (no manure present).

Photo 5: View of small calf hutch area on east end of the southern calf barn.

Feed Management and Its Leachate

All runoff from feed bunkers is directed into basin/ditch that flows into a small collection tank. A pump has been added to the collection area to pump directly into WSF 1. If the pump cannot keep up during a rain event, runoff flows into adjacent clay collection basin, at some point the diluted storm water runoff reaches the pipe that outlets into the vegetated treatment area (VTA). The VTA has had grading issues since it was constructed, runoff does not properly disperse evenly across VTA resulting in channelized flow discharging to culvert connected to drainage ditch.

Photo 6: View looking west at leachate and runoff collection ditch/basin for feed storage bunkers.

Photo 7 (left): Looking north at runoff pump station area.

Photo 8 (bottom left): Close view of collection tank and pump. Runoff is pumped into the adjacent waste storage facility.

Photo 9 (bottom right): Looking east at clay overflow runoff collection basin.

Photo 10 (left): View of pipe discharging feed storage runoff water into WSF 1.

Photo 11 (below): Overview photo of vegetated treatment area drainage.

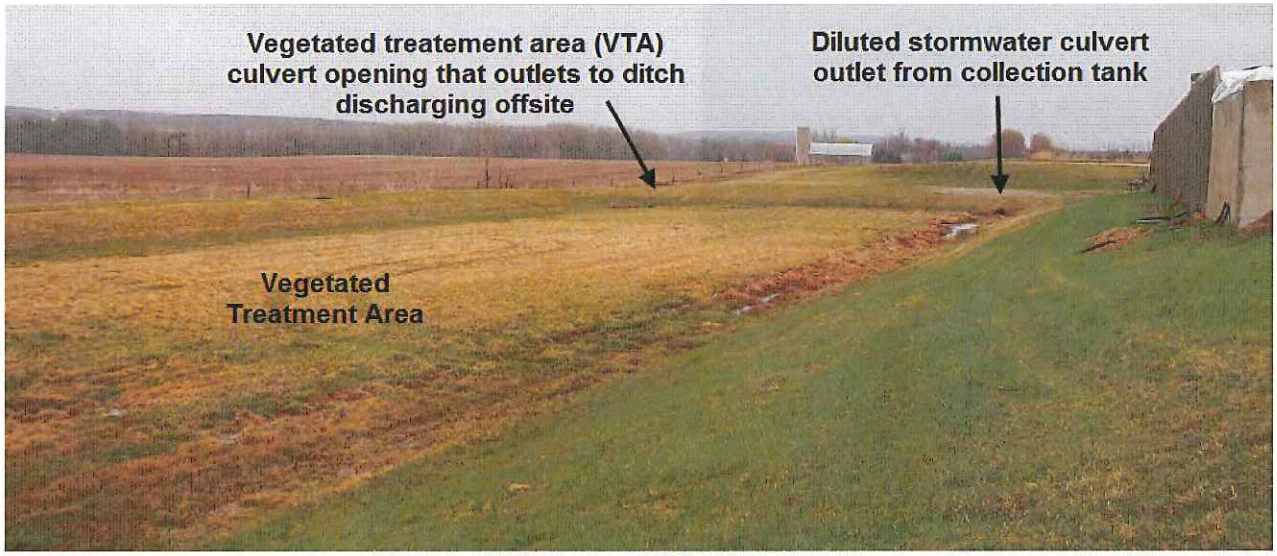
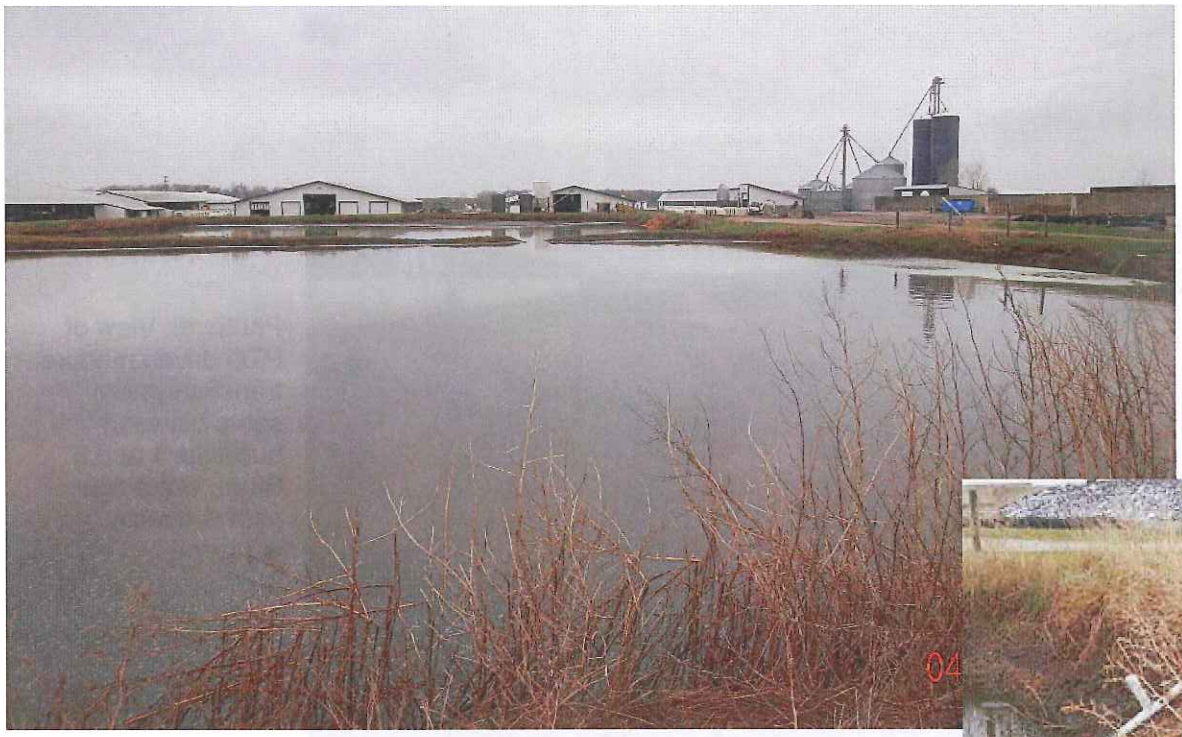


Photo 12: Looking west at VTA with channelized runoff flow into culvert inlet (in foreground).

Photo 13: View of culvert outlet from VTA that discharges into drainage ditch leading to the East River. Drainage path had been recently dredged.

Milking Parlor Wastewater
Wastewater from parlor gets pumped into waste storage facility 1 (WSF 1).

Manure Storage
Gold Dust Dairy has two large earthen waste storage facilities (WSF). WSF 1 is a two-celled earthen storage and accepts waste from the feed storage area, parlor and northern barns. WSF 2 is an earthen storage accepting waste from the southern freestall barns. Storages were operating below the maximum operating level at time of inspection. MOL markers were installed in both storages. Agitation pads should be added to storages.



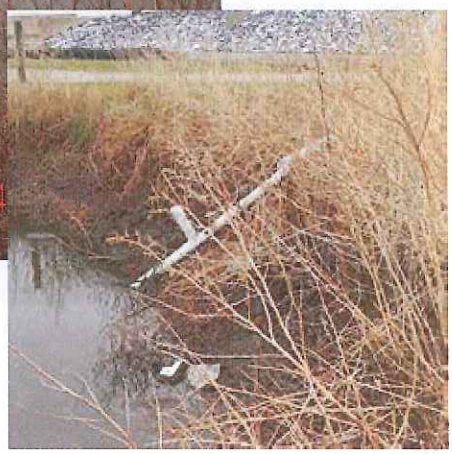


Photo 14 (above): Looking west at WSF 1, cell divider for sand settling was visible in center of storage.

Photo 15 (right): View of MOL marker in WSF 1.

Photo 16 (above): Looking south at WSF 2.

Photo 17 (right): View of temporary MOL marker in the southwest corner of WSF 2; previous PVC marker had broken.

Photo 18: View of PTO driven manure transfer system setup between buildings 1 and 2. Storm water flow path is directly adjacent.

Storm Water Flow Paths

Ancillary driveway areas and storm water between barns flow primarily in 3 directions (see blue arrows in overview photo 1). Careful management is needed to ensure storm water is not coming into contact with farm-generated waste streams.

Photo 19 (left): Looking west in front of former dry storage building which now houses calves. Storm water flow path is west then north.

Photo 20 (right): View inside northern calf barn, calves are bedded with straw.

Photo 21: View looking south at storm water flow from driveway area. Tile inlet is no longer functional. Thompson indicated that they have been unable to locate an outlet for the tile system.

Photo 22: Looking north at flow path into field that eventually discharges to road ditch. Water was turbid and cloudy but did not appear to contain waste stream.

Photo 23: View of storm water ditch between buildings 5 and 6. Unknown source of tile outlet coming from direction of manure reception tank building—should dig out and cap off. Water in flow path is murky, most storm water ditches onsite need to be cleaned out, graded properly and seeded down and stabilized.

Photo 24 (left): Looking north at storm water ditch between waste storage and barns. Water was murky and turbid.

Photo 25 (above): View of storm water outfall on southeast corner of Gold Dust Dairy that discharges to the East River.

Water Sampling
Two sets of water samples were taken. Locations are shown on the air photo overview map. Samples were sent to the State Lab of Hygiene for analysis—results indicate pollutant discharges to navigable waters.

Lab data summary (note: lab data sheets attached to this report):

Sample GD-01	
Total Coliform	500/cfu 100 mL
Enterococci	1310/100 mL
E Coli	500/100 mL
BOD 5 Day	No Detect
Nitrogen NH3-N Diss	24.8 MG/L
Nitrogen NO3+NO2 Diss	0.0519 MG/L
Nitrogen Kjeldahl Total	49.2 MG/L
Phosphorus Total	10.1 MG/L
Sample GD-02	
Total Coliform	9000/cfu 100 mL
Enterococci	2330/100 mL
E Coli	9090/100 mL
BOD 5 Day	No Detect
Nitrogen NH3-N Diss	8.50 MG/L
Nitrogen NO3+NO2 Diss	0.721 MG/L
Nitrogen Kjeldahl Total	21.4 MG/L
Phosphorus Total	3.79 MG/L

Photo 26 (above): View of sample GD-01 of vegetated treatment area discharge culvert.

Photo 27 (below): View of sample GD-02 of storm water ditch discharge culvert.

Review of Records
Nutrient management plan is on CD and computer. Restriction maps in binder were shown as well as spreading logs used to track manure applications. James Thompson keeps daily and weekly site inspection records which were shown during inspection.

Summary
At this time, Thompson's Gold Dust Dairy is not in substantial compliance with permit conditions. The following are action items that will assist with returning to compliance:

- During dry conditions, clean out and regrade all storm water ditches. This will remove any residual contaminants. Ditches should be shallow swales that are completely vegetated and regularly mowed.
- Remove any unknown exposed tile outlets.
- Assessment of options for manhole opening that accepts storm water drainage between barns. It is likely that during heavy rain events, some manure mixes with storm water and discharges with storm water.
- Relocation or abandonment of any outdoor calf hutch areas. Areas should not be near any storm water flow paths to prevent migration of manure into storm water ditches.
- Hire an engineer to assist with designing upgrades to the feed storage area runoff system. Modifications are required to stop the discharges from this area. Modifications that were completed without review (pump installation and transfer line) and proposed modification need plan review and approval from the Department.

Wisconsin Department of Natural Resources
Laboratory Report

Laboratory:

Wisconsin State Laboratory of Hygiene
2601 Agriculture Dr
Madison WI 53718
Phone : 800-442-4618 Fax Phone : 608-224-6213

DNR ID . 113133790

Sample:

Field #:	GD-01	Sample #:	129273001
Collection Start:	04/24/2014 03:17 pm	Collection End:	04/24/2014 03:17 pm
Collected by:	RYAN YELLE	Waterbody/Outfall Id:	
ID #:		ID Point #:	
County:	Brown	Account #:	WT093
Sample Location:	GOLD DUST DAIRY VTA		
Sample Description:	GOLD DUST - VTA CULVERT		
Sample Source:	Surface Water	Sample Depth:	0.1F
Date Reported:	04/26/2014	Sample Status:	COMPLETE
Project No:		Sample Reason:	Investigation

Analyses and Results:

Analysis Method	Analysis Date	Lab Comment
SM9222D	04/26/2014	Analyzed past the 6 hours holding time: Method Federal Register July 2003 analyzed on 04/25/14 1247

Code	Description	Result	Units	LOD	Report Limit	LOQ
99836	COLIFORM, FECAL, MEMBRANE FILTER, MFC AGAR, WET WT	500	CFU/100ml	100		100

Analysis Method	Analysis Date	Lab Comment
Federal Register July 2003	04/26/2014	Analyzed past the 6 hours holding time: Method Federal Register July 2003 analyzed on 04/25/14 1247

Code	Description	Result	Units	LOD	Report Limit	LOQ
99119	ENTEROCOCCI ENTEROLERT	1310	/100 ML	100		100

Analysis Method	Analysis Date	Lab Comment
SM9223BMPN	04/26/2014	Analyzed past the 6 hours holding time: Method Federal Register July 2003 analyzed on 04/25/14 1247

Code	Description	Result	Units	LOD	Report Limit	LOQ
99188	E COLI COLILERT QUANTITRAY MPN	579	/100 ML			1

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2601 Agriculture Dr
Madison **WI** **53718**
Phone : **800-442-4618** *Fax Phone :* **608-224-6213**

Sample:

Field #:	**GD-02**	*Sample #:*	**129275001**
Collection Start:	**04/24/2014 03:30 pm**	*Collection End:*	**04/24/2014 03:30 pm**
Collected by:	**RYAN YELLE**	*Waterbody/Outfall Id:*	
ID #:		*ID Point #:*	
County:	**Brown**	*Account #:*	**WT093**
Sample Location:	**GOLD DUST DAIRY - DITCH**		
Sample Description:	**GOLD DUST - SE DITCH**		
Sample Source:	**Surface Water**	*Sample Depth:*	**O.1F**
Date Reported:	**04/26/2014**	*Sample Status:*	**COMPLETE**
Project No:		*Sample Reason:*	**Investigation**

Analyses and Results:

Analysis Method	*Analysis Date*	*Lab Comment*
SM9223BMPN	**04/26/2014**	**Analyzed past the 6 hours holding time: Method Federal Register July 2003 analyzed on 04/25/14 1247**

Code	*Description*	*Result*	*Units*	*LOD*	*Report Limit*	*LOQ*
99188	**E COLI COLILERT QUANTITRAY MPN**	**9090**	/100 ML			100

Analysis Method	*Analysis Date*	*Lab Comment*
SM9222D	**04/26/2014**	**Analyzed past the 6 hours holding time: Method Federal Register July 2003 analyzed on 04/25/14 1247**

Code	*Description*	*Result*	*Units*	*LOD*	*Report Limit*	*LOQ*
99836	**COLIFORM, FECAL, MEMBRANE FILTER, MFC AGAR, WET WT**	**9000**	CFU/100ml	1000		1000

Analysis Method	*Analysis Date*	*Lab Comment*
Federal Register July 2003	**04/26/2014**	**Analyzed past the 6 hours holding time: Method Federal Register July 2003 analyzed on 04/25/14 1247**

Code	*Description*	*Result*	*Units*	*LOD*	*Report Limit*	*LOQ*
99119	**ENTEROCOCCI ENTEROLERT**	**2330**	/100 ML	100		100

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Laboratory: Wisconsin State Laboratory of Hygiene DNR ID 113133790
2601 Agriculture Dr
Madison WI 53718
Phone : 800-442-4618 Fax Phone : 608-224-6213

Sample:

Field #:	GD-01	Sample #:	129279005
Collection Start:	04/24/2014 03:17 pm	Collection End:	04/24/2014 03:17 pm
Collected by:	RYAN YELLE	Waterbody/Outfall Id:	
ID #:		ID Point #:	
County:	Brown	Account #:	WT093
Sample Location:	GOLD DUST DAIRY VTA		
Sample Description:	VTA CULVERT		
Sample Source:	Other Waste	Sample Depth:	0.1FT
Date Reported:	06/11/2014	Sample Status:	COMPLETE
Project No:		Sample Reason:	Investigation

Analyses and Results:

Analysis Method	Analysis Date	Lab Comment
EPA 351.2	06/05/2014	SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000

Code	Description	Result	Units	LOD	Report Limit	LOQ
625	NITROGEN KJELDAHL TOTAL	49.2	MG/L	2.80		8.00

Analysis Method	Analysis Date	Lab Comment
EPA 350.1	05/12/2014	SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000

Code	Description	Result	Units	LOD	Report Limit	LOQ
608	NITROGEN NH3-N DISS	24.8	MG/L	0.600		1.92

Analysis Method	Analysis Date	Lab Comment
EPA 365.1	05/02/2014	SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000

Code	Description	Result	Units	LOD	Report Limit	LOQ
665	PHOSPHORUS TOTAL	10.1	MG/L	0.500		1.60

Analysis Method	Analysis Date	Lab Comment
EPA 353.2	05/12/2014	SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000

Code	Description	Result	Units	LOD	Report Limit	LOQ
631	NITROGEN NO3+NO2 DISS (AS N)	0.0519	MG/L	0.0190		0.0610

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Analysis Method	Analysis Date	Lab Comment
SM5210B	**04/25/2014**	**SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000**

Code	Description	Result	Units	LOD	Report Limit	LOQ
310	**BOD 5 DAY**	**ND**	MG/L	120		120

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Laboratory: Wisconsin State Laboratory of Hygiene DNR ID 113133790
2601 Agriculture Dr
Madison WI 53718
Phone : 800-442-4618 Fax Phone : 608-224-6213

Sample:

Field #:	GD-02	Sample #:	129279006
Collection Start:	04/24/2014 03:30 pm	Collection End:	04/24/2014 03:30 pm
Collected by:	RYAN YELLE	Waterbody/Outfall Id:	
ID #:		ID Point #:	
County:	Brown	Account #:	WT093
Sample Location:	GOLD DUST DAIRY - DITCH		
Sample Description:	SE DITCH		
Sample Source:	Other Waste	Sample Depth:	0.1FT
Date Reported:	06/11/2014	Sample Status:	COMPLETE
Project No:		Sample Reason:	Investigation

Analyses and Results:

Analysis Method	Analysis Date	Lab Comment
EPA 365.1	05/02/2014	SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000

Code	Description	Result	Units	LOD	Report Limit	LOQ
665	PHOSPHORUS TOTAL	3.79	MG/L	0.500		1.60

Analysis Method	Analysis Date	Lab Comment
EPA 351.2	06/05/2014	SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000

Code	Description	Result	Units	LOD	Report Limit	LOQ
625	NITROGEN KJELDAHL TOTAL	21.4	MG/L	2.80		8.00

Analysis Method	Analysis Date	Lab Comment
SM5210B	04/25/2014	SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000

Code	Description	Result	Units	LOD	Report Limit	LOQ
310	BOD 5 DAY	ND	MG/L	120		120

Analysis Method	Analysis Date	Lab Comment
EPA 353.2	05/12/2014	SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000

Code	Description	Result	Units	LOD	Report Limit	LOQ
631	NITROGEN NO3+NO2 DISS (AS N)	0.721	MG/L	0.0190		0.0610

Wisconsin Department of Natural Resources
Laboratory Report

Analysis Method	Analysis Date	Lab Comment
EPA 350.1	**05/12/2014**	**SAMPLE MATRIX CHANGED DUE TO PARTICULATE CONTENT.,Analyzed past the 28 days holding time: Method EPA 351.2 analyzed on 06/04/14 0000**

Code	Description	Result	Units	LOD	Report Limit	LOQ
608	**NITROGEN NH3-N DISS**	**8.50**	MG/L	0.150		0.480